

What is claimed is.

1 1. A content and application delivery system comprising:

2 an origin web site having an origin web server, said origin web server
3 having a first memory for storing a first version of a web content;

4 an edge server communicating via a data network with said origin web
5 server and a policy control server;

6 said edge server having a second memory for storing a second version of
7 said web content and deriving said second version from said origin web
8 server according to directives of a service policy that resides at said pol-
9 icy control server, said edge server downloading said directives of said
10 service policy from said policy control server via said data network;

11 wherein a request of a user directed to said origin web site for a re-
12 source from said web content is redirected to said edge server, and respon-
13 sive to said request a third version of said web content is provided to the
14 user from said edge server, said third version being derived from said sec-
15 ond version in accordance with said directives of said service policy.

1 2. The system according to claim 1, wherein said policy control server
2 is said origin web server.

1 3. The system according to claim 1, wherein said directives of service
2 policy are specified using an XML based language.

1 4. The system according to claim 3, wherein said directives of said
2 service policy include a description of resources of said origin web site.

1 5. The system of claim 4 wherein said description of resources is
2 specified using a resource definition framework, said resource definition
3 framework having extensions comprising protocol, type, size, encoding con-
4 vention, creation time, expiration time, keyword, target groups, an alter-
5 nate URL for fetching said resources, and a location of a code for creating
6 a dynamic resource;

7 wherein said description of resources includes at least one of said ex-
8 tensions.

1 6. The system according to claim 4 wherein said directives of said
2 service policy include a description of users at a target site.

1 7. The system of claim 1 wherein communication between said edge server
2 and at least one of said policy control server and said origin web server is
3 effected using an http protocol or an https protocol.

1 8. The system of claim 1, wherein said origin web site comprises a plu-
2 rality of origin web sites, and said first version is distributed in said
3 plurality of origin web sites, defining thereby a distributed first version,
4 said second version being derived from said distributed first version.

1 9. The system of claim 1 wherein said policy control server comprises a
2 plurality of web servers.

1 10. The system of claim 9, wherein said web servers are said origin web
2 server, said edge server and a server located at a third party site.

1 11. The system of claim 1, wherein said directives comprise a descrip-
2 tion of an edge server group associated with said origin web site.

1 12. The system of claim 11, wherein said description of an edge server
2 group includes information concerning at least one of an organization type,
3 geographical region, language, business relation to said origin web site,
4 edge server hardware capabilities, edge server software capabilities, edge
5 server security specifications, internet location and internet connection
6 speed of members of said edge server group.

1 13. The system of claim 1, wherein said second version is derived from
2 said first version by the steps of:

3 selecting resources from said first version according to predetermined
4 criteria comprising at least one of a resource URL, time of resource genera-
5 tion, length, keyword list, target groups, data format, and key;

6 transforming a selected resource in said second memory responsive to
7 said directives, wherein said directives comprise a description of an edge
8 server group associated with said origin web site to define a transformed
9 selected resource; and

10 storing said transformed selected resource in said second memory.

1 14. The system according to claim 13, wherein said second memory com-
2 prises a cache memory.

1 15. The system according to claim 13, wherein said predetermined crite-
2 ria comprise a presence of updated resources in said first version that are
3 absent in said second version.

1 16. The system according to claim 1, wherein said service policy dif-
2 ferentiates a resource of said first version from a resource of said second
3 version according to an attribute of said edge server and an attribute of at
4 least one of said first resource and said second resource.

1 17. The system according to claim 16, wherein said attribute comprises
2 at least one of a caching priority, caching validation, a caching invalida-
3 tion, preposition at a predetermined time and preposition upon an occurrence
4 of a predetermined event.

1 18. The system according to claim 1, wherein said service policy dif-
2 ferentiates a resource of said second version from a resource in said third
3 version according to at least one of attribute of the user, attribute of the
4 edge server, request time and attribute of the resource.

1 19. The system according to claim 1, wherein one of said directives of
2 said service policy instructs said edge server to redirect said request of
3 said user to another web resource.

1 20. The system according to claim 19, wherein said another web resource
2 is located at said origin web site.

1 21. The system according to claim 19, wherein said another web resource
2 is external to said origin web site.

1 22. The system according to claim 19, wherein said request is redi-
2 rected by sending an http redirect instruction from said edge server to said
3 user.

1 23. The system according to claim 19, wherein said request is redi-
2 rected to another resource by said edge server by modifying a URL portion of
3 said request and loading the resource from the origin site.

1 24. The system according to claim 19, wherein said request is redi-
2 rected according to an attribute of the user.

1 25. The system according to claim 1, wherein at least two of said first
2 version, said second version, and said third version are identical.

1 26. The system according to claim 1, wherein a group of resources of
2 said first version is stored in a compressed form, and a corresponding group
3 of resources of said second version is uncompressed by said edge server ac-
4 cording to said directives.

1 27. The system according to claim 26, wherein said group of resources
2 of said first version is stored in a packed form, and said corresponding
3 group of resources of said second version is unpacked by said edge server
4 according to said directives.

1 28. The system according to claim 1, wherein a resource of said first
2 version is in an encrypted form, and a corresponding resource of said second
3 version is decrypted by said edge server according to said directives.

1 29. The system according to claim 1, wherein a resource of said first
2 version is communicated by a first protocol to form a resource of said sec-
3 ond version, wherein said resource of said second version is communicated by
4 a second protocol to form a resource of said third version.

1 30. The system according to claim 29, wherein said first protocol is
2 file transfer protocol and said second protocol is http.

1 31. The system according to claim 29, wherein said first protocol is
2 identical to said second protocol, wherein parameters of said first protocol
3 differ from parameters of said second protocol.

1 32. The system according to claim 1, wherein said resource has an ac-
2 tion defined therein, and said edge server performs said action.

1 33. The system according to claim 32, wherein said action comprises
2 execution of an application.

1 34. The system according to claim 33, wherein said application is a web
2 form processing application;

3 wherein in a first step said edge server communicates a form to be com-
4 pleted by the user; and

5 in a second step parameters of said form are transmitted from the user
6 to said edge server.

1 35. The system according to claim 33, wherein said application is a
2 user password processing application;

3 wherein in a first step said edge server triggers a password template
4 to be filled by the user; and

5 in a second step form parameters of said password template are trans-
6 mitted from the user to said edge server.

1 36. The system according to claim 33, wherein instructions of said ap-
2 plication cause said edge server to identify an attribute of said user that
3 is included in said request and to return resources in said second memory of
4 said edge server that are associated with a URL of said request and said at-
5 tribute of said user.

1 37. The system according to claim 36, wherein said attribute is identi-
2 fied in a request header having a cookie, and said resources are defined in
3 said directives of said service policy, wherein said directives are stored
4 in said edge server.

1 38. The system according to claim 33, wherein said application is a
2 user password processing application;

3 wherein said edge server forwards said request to said origin web
4 server and delivers a user name and a user password to said origin web
5 server;

6 wherein responsive to said user name and said user password said re-
7 source is transmitted by said origin web server to said edge server.

1 39. The system according to claim 38, wherein said resource is held in
2 a cache by said edge server.

1 40. The system according to claim 33, wherein said application is a web
2 common gateway interface extension or a Java servlet.

1 41. The system according to claim 1 wherein the user is a member of a
2 group, and responsive to said request said edge server authenticates a mem-
3 bership of the user in said group.

1 42. The system according to claim 1, wherein said edge server is in
2 communication with an external web server via said data network, and a por-
3 tion of said second version is obtained from said external web server ac-
4 cording to said service policy.

1 43. The system according to claim 1, wherein said resource is received
2 by said edge server from said origin web server and stored therein, wherein
3 said resource is modified prior to being stored in said edge server respon-
4 sive to attributes of said edge server, said user, and said resource that
5 are specified in said directives of said service policy.

1 44. The system according to claim 43, wherein said resource is modified
2 by replacement thereof with a second resource that is local to said edge
3 server.

1 45. The system according to claim 43, wherein said resource is modified
2 by combination thereof with a second resource that is local to said edge
3 server.

1 46. The system according to claim 43, wherein said resource is a web
2 page that is modified by an operation consisting of at least one of frame
3 insertion, textual or graphic insertion, html code insertion, link modifica-
4 tion, embedded object modification, and adaptation of said web page to re-
5 quirements of a browser.

1 47. The system according to claim 46, wherein a first URL in an embed-
2 ded link of said web page is modified to define a second URL having a domain
3 name value such that a routing of said request using said second URL is di-
4 rected to said edge server.

1 48. The system according to claim 1, wherein said request is modified
2 according to edge server, user and resource attributes that are specified in
3 said directives.

1 49. The system according to claim 48, wherein said request is modified
2 by an operation consisting of at least one of an addition of user informa-
3 tion to an http header of said request, adding a cookie to said request,
4 modifying a URL of said request, modifying form content of said URL, modify-
5 ing a body of said request, and adding password information to said URL.

1 50. The system according to claim 48 wherein said resource comprises a
2 first URL, and said request is modified by an operation comprising modifying
3 said first URL to define a second URL having a domain name value such that a
4 routing of said request using said second URL omits said edge server.

1 51. The system according to claim 48, wherein said resource comprises a
2 first URL, wherein in a first operation said first URL is modified to define
3 a second URL having a domain name value such that a routing of said request
4 using said second URL is directed to said edge server, and in a second op-
5 eration said second URL is modified to define a third URL having a domain
6 name value such that a routing of said request using said third URL omits
7 said edge server.

1 52. The system according to claim 1 further comprising a DNS system as-
2 sociated with said data network, and said request is redirected by said DNS
3 system;

4 wherein said DNS system resolves a domain name that is included in
5 said request for said resource, and said DNS system provides the user with
6 an address of one of said origin web server, another web server that can
7 serve the resource and said edge server.

1 53. The system according to claim 52, wherein said service policy dif-
2 ferentiates said first version from said second version according to at
3 least one attribute of the user, attribute of the edge server, request time
4 and attribute of the resource.

1 54. The system according to claim 52, wherein said service policy dif-
2 ferentiates said second version from said third version according to at
3 least one of an attribute of said user, an attribute of said edge server, a
4 request time and an attribute of the resource.

1 55. The system according to claim 52, wherein at least two of said
2 first version, said second version, and said third version are identical.

1 56. The system according to claim 52, wherein said first version is
2 stored in a compressed form, and said second version is uncompressed by said
3 edge server.

1 57. The system according to claim 52, wherein said resource has an ac-
2 tion defined therein, and said edge server performs said action.

1 58. The system according to claim 57, wherein said action comprises
2 execution of an application.

1 59. The system according to claim 52, wherein the user is a member of a
2 group, and responsive to said request said edge server authenticates a mem-
3 bership of the user in said group.

1 60. The system according to claim 52, wherein said edge server is in
2 communication with an external origin server via said data network, and a
3 portion of said second version is obtained from said external origin server
4 according to said service policy.

1 61. The system according to claim 52, wherein said second version is
2 obtained by said edge server from said origin web server according to a
3 modification of a URL, said modification designating a portion of said first
4 version in said origin web server.

1 62. A computer implemented method of electronic commerce, comprising
2 the steps of:

3 storing a first version of web content in a first server;
4 implementing a service policy as control instructions that reside in
5 said first server;

6 transmitting said control instructions from said first server to a sec-
7 ond server, wherein said control instructions reside in said first server;

8 responsive to said control instructions, storing a second version of
9 said web content in said second server;

10 redirecting a first request of a first user directed to said first
11 server for a first resource of said web content to said second server;

12 providing said first user with a third version of said web content from
13 said second server;

14 redirecting a second request of a second user directed to said first
15 server for a second resource of said web content to said second server in
16 accordance with said control instructions;

17 providing said second user with a fourth version of said web content
18 from said second server in accordance with said control instructions; and

19 associating said first user with said second user via a communication
20 path extending through said second server.

1 63. The method according to claim 62, wherein said third version and
2 said fourth version are identical.

1 64. The system according to claim 62, further comprising the step of
2 differentiating said first version from said second version according to an
3 attribute of said second server.

1 65. The system according to claim 62, further comprising the step of
2 differentiating said second version from said third version according to a
3 criterion consisting of at least one of an attribute of said user, an at-
4 tribute of an edge server, a request time and an attribute of the resource.

1 66. The system according to claim 62, further comprising the steps of:
2 compressing said first version,
3 downloading said first version from said first server to said second
4 server;
5 uncompressing said first version in said second server; and
6 deriving said second version from said first version in said second
7 server.

1 67. The system according to claim 62, wherein said first resource per-
2 forms an action defined therein, said action comprising the step of execut-
3 ing of an application.

1 68. The system according to claim 67, wherein said step of executing an
2 application comprises:

3 communicating a form to be completed by said first user; and
4 accepting parameters of said form from said first user.

1 69. The system according to claim 67, wherein said step of executing an
2 application comprises:

3 triggering a password template to be filled by said first user; and
4 accepting parameters of said password template from said first user.

1 70. A domain name system, comprising:
2 a regional DNS server that is non-authoritative for an external domain
3 name zone;
4 a root DNS server; and
5 an authoritative DNS server for said external domain name zone, said
6 regional DNS server, said root DNS server, and said authoritative DNS server
7 being linked via a data network;
8 wherein in response to a DNS address resolution request for a name
9 within said external domain name zone received from a client, said regional
10 DNS server effects a first resolution of said DNS address resolution request
11 into a first network address and communicates said first network address
12 to said client, said first network address being different from a second
13 network address that is configured in said authoritative DNS server, wherein
14 said second network address comprises a second resolution of said DNS ad-
15 dress resolution request in said external domain name zone.

1 71. The domain name system according to claim 70, wherein said first
2 resolution effected by said regional DNS server is controlled by a policy
3 control server that is linked to said data network.

1 72. The domain name system according to claim 70, further comprising an
2 Edge DNS server linked to said data network.

1 73. The domain name system according to claim 72, wherein said regional
2 DNS server conducts a zone forwarding procedure to said Edge DNS server for
3 a domain name corresponding to said first resolution.

1 74. The domain name system according to claim 73, wherein said first
2 resolution effected by said regional DNS server is controlled by a policy
3 control server that is linked to said data network.

1 75. The domain name system according to claim 73, wherein responsive to
2 said zone forwarding procedure said Edge DNS server returns said first
3 resolution of said DNS address resolution request to said regional DNS
4 server.

1 76. The domain name system according to claim 72, wherein said first
2 network address is registered in said Edge DNS server in response to a DNS
3 cache registration operation.

1 77. The domain name system according to claim 72, wherein a resolution
2 table of said Edge DNS server is automatically derived from said regional
3 non-authoritative DNS server responsive to a directive of said policy con-
4 trol server.

1 78. The domain name system according to claim 72, wherein said Edge DNS
2 server comprises a plurality of Edge DNS servers, wherein in an event of a
3 failure of a first one of said Edge DNS servers, a second one of said Edge
4 DNS servers is substituted therefor.

1 79. A method of domain name resolution, comprising the steps of:
2 receiving a DNS address resolution request via a data network from a
3 client for a name within an external domain name zone in a regional DNS
4 server that is non-authoritative for said external domain name zone;
5 obtaining a first resolution of said DNS address resolution request
6 from an authoritative DNS server for said external domain name zone via said
7 data network, defining a first network address, wherein said authoritative
8 DNS server is linked to a root DNS server in said data network;
9 effecting a second resolution of said DNS address resolution request in
10 said regional DNS server, defining a second network address, wherein said
11 second network address is different from said first network address; and
12 communicating said second network address to said client via said data
13 network.

1 80. The method according to claim 79, further comprising the steps of:
2 linking a policy control server in said data network; and
3 controlling said second resolution according to a policy of said policy
4 control server that corresponds to said name in said external domain name
5 zone.

1 81. The method according to claim 80, wherein said policy control
2 server resides in an origin server that corresponds to said name in said ex-
3 ternal domain name zone.

1 82. The method according to claim 80 wherein said policy controls said
2 second resolution by specifying a domain name according to an operational
3 criterion of an origin server in said data network.

1 83. A method of domain name resolution, comprising the steps of:
2 receiving a DNS address resolution request via a data network from a
3 client for a name within an external domain name zone in a regional DNS
4 server that is non-authoritative for said external domain name zone, wherein
5 an authoritative DNS server is accessible in said data network by said re-
6 gional DNS server, and said name is resolvable in said authoritative DNS
7 server to effect a first resolution thereof, defining a first network ad-
8 dress, and said authoritative DNS server is linked to a root DNS server in
9 said data network;
10 forwarding said DNS address resolution request from said regional DNS
11 server to an Edge DNS server via said data network;
12 instructing an edge server in said data network to periodically write
13 a regional domain name DNS resolution into a resolution cache of said Edge
14 DNS server, wherein a time-to-live interval of said regional domain name DNS
15 resolution exceeds an interval between successive performances of said step
16 of writing;
17 responsive to said step of periodically writing, effecting a second
18 resolution of said DNS address resolution request in said Edge DNS server,
19 defining therein a second network address, wherein said second network ad-
20 dress is different from said first network address;
21 communicating said second network address from said Edge DNS server to
22 said regional DNS server via said data network; to define an actual network
23 address; and
24 communicating said actual network address from said regional DNS server
25 to said client via said data network.

1 84. The method according to claim 83, further comprising the steps of:
2 in an event of failure of said edge server to perform said step of pe-
3 riodically writing, obtaining said actual network address by querying said
4 root DNS server to obtain said first resolution ; and
5 storing said first resolution in said Edge DNS server, to define said
6 actual network address therein as said first network address.

1 85. The method according to claim 83, further comprising the steps of:
2 linking a policy control server in said data network; and

3 controlling said second resolution according to a policy of said policy
4 control server.

1 86. The method according to claim 85 wherein said second resolution is
2 effected by an operation consisting of at least one of providing a local
3 edge server network address, providing an origin site network address, and
4 altering a time to live value for a cached resolution.

1 87. The method according to claim 85, wherein said policy control
2 server resides in an origin server that corresponds to said name in said ex-
3 ternal domain name zone.

1 88. A method of domain name resolution, comprising the steps of:
2 receiving a DNS address resolution request via a data network from a
3 client for a name within an external domain name zone in an regional DNS
4 server that is nonauthoritative for a region said external domain name zone;
5 wherein said name is mapped at an authoritative DNS server to a first
6 network address, and said regional DNS server forwards said request to an
7 Edge DNS server that is non-authoritative for said external domain name
8 zone, said Edge DNS server defining a second network address, wherein said
9 second network address is different from said first network address;
10 communicating said second network address from said Edge DNS server to
11 said regional DNS server via said data network; and
12 communicating said second network address from said regional DNS server
13 to said client via said data network.

1 89. The method according to claim 88, further comprising the steps of:
2 linking a policy control server in said data network; and
3 controlling said second network address according to a policy of said
4 policy control server.

1 90. A method of domain name resolution, comprising the steps of:
2 using an edge server, inserting registrations into an Edge DNS server
3 for a name of a domain via a data network, wherein said Edge DNS server is
4 configured as a master DNS server for said domain;
5 receiving in a regional DNS server in said data network a DNS address
6 resolution request via said data network from a client for said name of said
7 domain;

8 responsive to one of said registrations, effecting a resolution of said
9 DNS address resolution request in said regional DNS server, to define a net-
10 work address; and
11 communicating said network address from said regional DNS server to
12 said client via said data network.

1 91. The method according to claim 90, further comprising the steps of:
2 testing unavailability of said Edge DNS server; and
3 responsive to said step of testing, redirecting entries of said re-
4 gional DNS server to one of a root DNS server and an origin server in said
5 data network.